

## Nonpoint Source Project Summary

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### ☒ Project Information

Grant #: 99445812      Award Fiscal Year: 2012      Region: 04      State: GA  
 Project Number: 09      State Project Number: 751-130088      Statewide: No  
 Project Title: Non-point Source BMP Implementation for Fecal Coliform Reduction in the Pennahatchee Creek Waters  
 Project Manager: Lance Renfrow      Phone: 706-256-2910  
 State Project Manager: Barbara Stitt-Allen      Phone: 404-675-1719  
 Will Have/Has Pollutant Load Data: Yes      TMDL: Implementing a TMDL

### ☒ Project Schedule

Project Start Date: Did Start On 11/16/2012 (MM/DD/YYYY)  
 Project End Date: Will Be Completed On 09/30/2014 (MM/DD/YYYY)  
 Comments:

### ☒ Project Status

Current Status	Reporting Period Date	Comment
Pending	10/16/2012	

### ☒ Project Budget

#### Grant Information

Cumulative Award for Grant: \$3,662,000  
 Total 319(h) Funds for all Projects: \$3,642,000  
**Balance:** \$20,000

\* 319(h) Base Funds: \$0  
 \* 319(h) Incremental Funds: \$333,620  
**Total 319(h) Funds:** \$333,620  
 EPA Other: \$0  
**EPA Budget:** \$333,620  
 Other Federal: \$0  
 State Funds: \$0  
 State In-Kind: \$0  
 Local Funds: \$222,794  
 Other Funds: \$0  
**Total Budget:** \$556,414

### ☒ Project Description

#### ☒ Overview

This project proposes to implement portions of the Pennahatchee Creek Watershed Management Plan (WMP - formerly Watershed Improvement Plan) that was completed in 2011 by the River Valley Regional Commission. The WMP includes the USEPA's Nine Key Elements of Watershed Planning.

Pennahatchee Creek empties into the Flint River at the western Dooly County line. A TMDL has been developed for Pennahatchee Creek (2008) which includes a 70.2% fecal coliform reduction goal at the Slosheye Trail Road crossing. Best management practices (BMPs) should be implemented in the watershed to reduce potential fecal coliform loads from non-point sources. The sources of this fecal coliform contamination for Pennahatchee Creek are invasive feral hogs and livestock farms.

Project Stream Name and 303(d) Location  
 Violation Extent Year TMDL Completed  
 Pennahatchee Creek  
 Sandy Mount Creek to Turkey Creek      Fecal Coliform      6 miles      FC (2008)

This plan, to reduce the fecal coliform levels, will implement EPA's 9 Key Element Plan outlined in the Watershed Improvement Plan (WIP) for Pennahatchee Creek. This plan

also supports the Upper Flint Regional Water Plan goals and objectives #2: Enhance public understanding of water resources and provide stakeholders with an opportunity for input into regional water policy; and #3: Maintain and strive to improve the quality and quantity of our water resources in order to protect natural ecosystems and public health. In addition, the plan supports the City of Vienna's Watershed Protection Plan by: Identifying structural and non-structural BMPs to promote water quality; following implementation plans for 303(d)-listed streams; and developing and implementing a long-term monitoring program that includes 303(d)-listed streams.

As part of the WIP revision, River Valley Regional Commission (RVRC) staff implemented a targeted monitoring approach throughout the Pennahatchee Creek watershed from December of 2010 through September of 2011 (see attached Sampling Sites map and E. Coli Data Log). This data suggests that a significant source of impairment may be upstream from Site 5, at the Slosheye Trail Road crossing. This is the same site where EPD's sampling station is located subsequently placing Pennahatchee Creek on the impaired streams list. In addition, as shown in the fecal coliform study performed by Georgia Southwestern State University (see attached WIP, Appendix G), this site had high counts of fecal coliform in 2002.

There are many invasive feral hogs (*Sus scrofa*) within this watershed. Little has been done to quantify their abundance. However, farmers within the watershed can ascertain this abundance by the amount of damage that is done on their crops by the invasive hogs.

Since these hogs have no natural predators and can produce litters of twelve or more two to three times per year, they can thrive and destroy without any opposition. Moreover, these invasive hogs degrade the quality of water by wading directly into the streams. Having no sweat glands, they wallow in the mud and creeks to cool off, especially during the warmer months. The cool climate of streams and the natural tree buffer that surrounds it, coupled with a hefty supply of food from neighboring farmers provides the ideal habitat for this invasive species. Without an organized BMP to control their abundance, the feral hog will continue to destroy the watershed in which they inhabit.

Several methods exist to harvest the invasive feral hog: hunting with a bow, dog, or rifle; and trapping with a box or corral. Many of these efforts do not approach the scale necessary to have a significant, long-term effect on reducing invasive pig populations across a large scale tract of land. However, when implemented properly, corral traps have consistently captured entire breeding populations of invasive hogs within a large tract of land, in a shorter amount of time than hunting or smaller traps, and at a significantly reduced cost.

Using corral traps is a new and innovative management practice that will effectively control the invasive feral hog population and thus, reduce the pollution levels of fecal coliform within the watersheds they inhabit. Successful implementation requires several weeks of preparation before the harvest. First, a survey must be conducted to determine the location of the hogs. This may be accomplished by direct observation, cameras, or by capturing a hog and placing a transmitter on it. Next you must condition the hogs to be comfortable within the harvest area. This is accomplished by having a feeder set to dispense food at the same time every day, preferably at sun down or sun up. After a week or so, the hogs begin to anticipate the feeding and arrive before the feeder starts. Next, a corral of approximately 35 feet in diameter is placed around the feeder, leaving an opening for the hogs to enter. Conditioning continues for about a week. Initially, the juveniles will enter the corral but the adults are skeptical. However, near the end of the conditioning period, larger males and females will enter the corral in anticipation for food. Once they are conditioned, a person on-site engages the remote trigger, and a gate closes on the corral. Hogs that remain outside of the corral when the gate closes are shot immediately by strategically placed marksmen. The remaining hogs in the corral are then harvested. The River Valley Regional Commission will contract with a professional feral hog-harvesting expert and will implement the method described above. The contractor will focus efforts near the impaired Pennahatchee Creek collection station and branch out from there as needed.

This is the only known method to successfully harvest the sounder, or the reproductive group of the hogs (females and juveniles). Capture of this sounder is an essential component to proper implementation. If a single female within a family group is not captured, the population will go from one to eighty or more within the following year. Without implementation of the plan described above, populations of the invasive hogs will continue to flourish within the watershed, and the water quality of Pennahatchee Creek will continue to demonstrate an impairment of fecal coliform.

Taking control of the invasive feral hog problem within the Pennahatchee Creek watershed will do more than alleviate the fecal coliform pollution. Because feral hogs damage forest infrastructure and consume forest food supplies, the quality of life will be better in the absence of feral hogs for native wildlife. Feral hogs contribute to thousands of dollars damage to cropland throughout the region. They even destroy the fencing that is designed to prevent them from entering the crops. Without having this burden, farmers will be able to save money, which will reduce the cost that consumers spend for their products. Hogs also enjoy the environment that land applications systems (LAS) provide. The cool mist and fertile ground offers the invasive hogs a reprieve from the sun and ideal rooting opportunities. Ironically, while rooting, they often destroy the infrastructure of the LAS, indirectly contributing further to the impairment of the surrounding watershed. In addition, although there are no streams in the area with reported sediment issues, controlling the hog population will reduce sediment transport throughout Pennahatchee Creek and subsequently the Flint River. Invasive hogs "wallow" in the streams to cool off and this greatly disturbs the sediment of the creek beds and turns the water a "murky-brown" color. Lastly, the harvest will benefit needy families and churches because the meat will be processed by USDA inspected/licensed facilities and then donated.

Livestock farms can cause pollution problems within a watershed. According to stakeholders, there are four livestock farms within the watershed. The only hog operation, located at 32.114227°, -83.853848°, contains approximately 100 domestic hogs. One cattle operation, located at 32.093068°, -83.911324°, contains approximately 90 cattle; another located at 32.109207°, -83.906408°, contains approximately 150 cattle; and the last cattle operation, located at 32.086325°, -83.841331°, contains approximately 40 cattle. These sources of fecal coliform may be significant enough to contribute to the impairment.

Through this project, the River Valley Regional Commission, with the assistance from Two Rivers RC&D Council and NRCS will implement no less than eighteen (18) BMPs within the identified livestock farms as recommended by the WIP's 9 Key Element Plan for Pennahatchee Creek. These BMPs may include but are not limited to alternative watering sources, fencing, composting facilities, stream crossings, waste facility covers, tree/shrub buffers, filter strips, water wells etc. In addition to installing BMPs, the project's objectives include working directly with landowners to increase understanding of the sources of NPS pollution in the watershed, as well as the need to abate these sources thereby protecting and improving water quality.

It should be noted that one source of contamination may be anthropogenic. The City of Vienna controls a Land Application System (LAS) approximately three and one half (3 ½) miles east of the Slosheye Trail Road crossing. Although it is unlikely that this site is contributing to the impairment, it is important to investigate the site to determine if human wastes are leaking into the watershed. Therefore, a fluorometric analysis of water samples will be evaluated before BMP installation in order to detect the presence of optical brighteners.

The ability to distinguish between human and animal sources of bacteria impairment is a critical component of choosing effective management measures. Collection of water samples for the fluorometric detection of optical brighteners as an indicator of human sources of bacterial impairment is a recently developed methodology (Hagedorn et al., 2009). Optical brighteners are used as an additive to laundry soaps, detergents, and cleaning agents (Turner Biosystems, 2007). Although optical brighteners contribute a very small proportion to the overall composition of laundry detergents, it has been estimated that approximately 5-80% can remain in discharged wastewater as dissolved compounds (Turner Biosystems, 2007). It is this retention in the human-based wastewater stream which makes optical brightener detection a valuable tool for discriminating between sources of bacterial impairment. The detection of optical brighteners in combination with high levels of bacteria can be an indicator of a failing septic system, illegal discharge or sewer leak. Use of this technology will enable the River Valley Regional Commission to determine if the sources of fecal coliform contamination are human or non-human within the Pennahatchee Creek watershed.

In addition to pre-BMP monitoring, the RVRC will conduct post-BMP monitoring to determine the success of the BMPs. The same sites (Sites 1-6, A and B) used for the Revision period targeted monitoring will be used for the post-BMP monitoring. RVRC estimates that targeted monitoring will begin in December of 2013 and end in September of 2014. One sample will be collected at each site each month for a total of eighty (80) samples.

The RVRC proposes to include an education component to this grant as well. For each contract year, the RVRC will host one (1) educational workshop to inform the residents and farmers of Dooley County the importance of water stewardship. The workshop will include information on feral hog harvesting as well as management practices that can help alleviate the pollution levels sourced from livestock operations. In addition, the RVRC plans to create, 1,000 (one thousand) manuals for "Wild Hog Control in Georgia". Currently, no such document exists that is specific to Georgia. In addition to the manuals helping farmers continue the feral hog BMP beyond the scope of the project; these manuals will be the "ground-breaking" source for the successful removal of the invasive hog within the state of Georgia.

## Objectives

The objective of this project is to implement portions of the Watershed Management Plan for Pennahatchee Creek to lower the amount of fecal coliform in the creek, and the approach will include:

- Fluorometric analysis of water samples to determine if sources of fecal coliform are anthropogenic; obtain thirty-two (32) samples
- Implementing/installing eighteen (18) traditional BMPs on four cattle/hog operations
- Completing EPD Region 5 Load Reduction Models for all BMPs installed.
- Implementing/installing approximately fifty (50) innovative invasive feral hog corral systems to remove approximately one thousand (1,000) invasive feral hogs within the watershed
- Donate approximately 155,000 pounds of meat to charity (families and churches): based of average weight of 155 lbs. per hog
- Developing one thousand (1,000) manuals for "Wild Hog Control in Georgia" to ensure long-term success of the feral hog BMP
- Holding two (2) Project Educational Workshops to educate the public regarding invasive feral hogs and anthropogenic effects on water quality as well as practical solutions to restore and protect the waters of our region
- Post Targeted Watershed Monitoring to evaluate the effectiveness of the implementation efforts; obtain eighty (80) samples

**Method**

## 5. Specific Project Activities:

## Project Activity #1: Conduct Pre-BMP Monitoring

Conduct pre-BMP monitoring for optical brighteners by using fluorometric analysis of water samples. The RVRC will implement and continue water quality monitoring in Pennahatchee Creek watershed to determine source of fecal coliform following recommendations from the Pennahatchee Creek WMP and previous Targeted Monitoring Plan. RVRC will obtain the necessary training or recertification to conduct monitoring.

Task 1: Purchase Picofluor™ Fluorometer and accompanying equipment to include, volumetric flasks, graduated cylinders, weigh boats and scoopula, and microbalance

## Task 1: Products

1. Fluorometer and other necessary equipment, and receipts

## Task 1: Measures of Success:

- ☐ Successful collection of all required materials

Task 2: Conduct pre-BMP monitoring at Sites 1-6, A and B to determine the presence of human wastes products within Pennahatchee Creek near the Vienna LAS; calculate geometric mean over 30-day period according to protocols in the Pennahatchee Creek WMP and previous Targeted Monitoring Plan.

## Task 2: Products

1. Regular submission of water quality data to GAEPD.

## Task 2: Measures of Success:

- ☐ Successful collection of four (4) samples per monitoring site for a total of thirty-two (32) samples during a 30-day period; readings that suggest the presence or absence of optical brighteners
- ☐ EPD acceptance and approval of water quality data.

## Project Activity #2: Implement Agricultural BMPs

The RVRC will oversee and coordinate, with Two Rivers RC&D Council and local NRCS, the agricultural design, contract development, and implementation of agricultural BMPs. The Coordinator will identify and contact potential agricultural BMP participants, help develop landowner/operator project contract agreements, work with Two Rivers RC&D Council (or NRCS) to install at least eighteen (18) agricultural BMPs throughout the watershed in accordance with the Watershed Improvement Plan, and provide locational and load reduction information to GAEPD.

Task 3: Identify and contact potential agricultural BMP participants within the Pennahatchee Creek watershed.

## Task 3: Products

1. Documentation of identification and contact strategy of agricultural producers.
2. Contact letters/emails; meeting agendas/minutes.

## Task 3: Measures of Success:

- ☐ Contact 100% of all agricultural producers within watershed; Contract with all livestock farmers to participate in the project.

Task 4: Develop contract agreements with agricultural producers to implement at least eighteen (18) agricultural BMPs.

## Task 4: Products

1. Copies of contract agreements with agricultural producers to implement at least eighteen (18) agricultural BMPs.

## Task 4: Measures of Success:

- ☐ Contract agreements to implement at least eighteen (18) agricultural BMPs.

Task 5: Install at least eighteen (18) agricultural BMPs in accordance with NRCS specifications. BMPs can include waste storage facilities, composting facilities, cattle grazing and holding areas, winter feeder sheds and stream bank stabilization enhancements such as exclusion fencing. BMPs will be installed within the Pennahatchee Creek watershed, giving priority to areas closer to Pennahatchee Creek. Locational information (lat/long) will be collected and submitted to GAEPD for all installed BMP's.

Conservation nutrient management plans (CNMP) will be developed for appropriate sites following USEPA requirements:

- Provide and maintain buffers or equivalent practices
- Divert clean water
- Prevent direct contact of confined animals within water of the United States
- Address animal mortality
- Address chemical disposal
- Address proper operation and maintenance
- Address record keeping and testing
- Maintain proper storage capacity

## Task 5: Products

1. Submittal of agricultural BMP contracts with NRCS inspections for reimbursement.
2. Location information (lat/long) of each BMP installed.
3. Pictures of implemented BMPs.

## Task 5: Measures of Success:

- ☐ NRCS approval of at least eighteen (18) agricultural BMPs.

Task 6: Estimate nutrient load reduction using the USEPA Region 5 Model as recommended by GAEPD will be used. Sediment load reduction estimates will also use the Region 5 model.

## Task 6: Products

1. Load reduction reports for each BMP (to be submitted with reimbursement request).

## Task 6: Measures of Success:

- ☐ 20% nutrient load reduction

## NOTE:

Section 319(h) Grant funds and non-federal matching funds will not be used to meet any draft or final NPDES permits requirements for Animal Feeding Operations / Concentrated Animal Feeding Operations (AFO/CAFO).

Any eligible AFO that receives financial assistance pursuant to this grant will have and work towards implementing a Nutrient Management Plan, as resources become available.

The Section 319(h) grant will not fund the installation of incinerators within those counties in the State designated as non-attainment areas for air quality standards by the USEPA. Composting is the preferred practice for Section 319(h) Grant funding as a means of dead livestock disposal.

All streambank stabilization activities will meet the Streambank and Shoreline Stabilization Guidance located online at [http://www.gaepd.org/Documents/techguide\\_wpb.html#es](http://www.gaepd.org/Documents/techguide_wpb.html#es). Grant funds may be used for Level One and Two practices. Level Three practices are discouraged and are not eligible for grant funding. Some use of riprap or armoring may be necessary, but should be used in conjunction with an integrated system and vegetation establishment. Check with 319(h) project staff if you have concerns about the eligibility of a proposed practice.

## Project Activity #3 Implement Feral Hog BMPs:

The RVRC will oversee and coordinate installation of approximately 50 innovative feral hog corral systems throughout the watershed in accordance with the Watershed Improvement Plan, and provide locational and load reduction information to GAEPD.

Task 7: Determine best locations for corral systems

Task 7: Products

1. Map, report

Task 7: Measures of Success:

- ☐ Successfully identifying each hog group within the target area

Task 8: Implement corral systems within watershed.

Task 8: Products

1. Pictures, video, map, report, meat to be donated

Task 8: Measures of Success:

- ☐ Harvest of 100% of the sounder (family group) within target area

Project Activity #4 Conduct Educational Outreach:

Conduct education and outreach component of the WMP to include two (2) workshops to educate public about public regarding invasive feral hogs and anthropogenic effects on water quality and develop a manual about the control of feral hogs in Georgia.

Task 9: Conduct two (2) Project Educational Workshops within or adjacent to the Pennahatchee Creek Watershed to educate the public regarding invasive feral hogs and anthropogenic effects on water quality

Task 9: Products

1. Workshop materials, pictures

Task 9: Measures of Success:

- ☐ Attendance of 25 participants per workshop

Task 10: Develop "Wild Hog Control in Georgia" manual

Task 10: Products

1. Manual for feral hog control in Georgia

Task 10: Measures of Success:

- ☐ Production of 1,000 manuals

Project Activity #5: Conduct Post-BMP Monitoring

Conduct post-BMP monitoring at Sites 1-6, A and B to determine BMP success in accordance with the watershed targeted monitoring approach. RVRC will test samples for e-coli rather than fecal coliform in order to accurately compare with previously obtained results.

Task 11: Conduct Post-BMP Monitoring

Task 11: Products

1. Regular submission of water quality data to GAEPD

Task 11: Measures of Success:

- ☐ Collection of a sample from each monitoring site once per month for a total of eighty (80) samples; 20% reduction in e-coli counts one year after BMP installation
- ☐ EPD acceptance and approval of water quality data.

Project Activity #6: Reporting

Task 12: Submit quarterly progress reports, including WBE/MBE reports and invoices by January 15th, April 15th, July 15th, and October 15th.

Task 12: Products

1. Reimbursement request invoices
2. Quarterly progress reports
3. Minority Business Enterprise/Women Business Enterprise (MBE/WBE) reports

Task 12: Measures of Success:

- ☐ Documentation for expenditures and match contributions
- ☐ Status of activity/tasks on progress reports

Task 13: Submit Draft closeout report prior to contract expiration date for review. Submit final Closeout Report 30 days after the project contract expires.

Task 13: Products

1. One (1) electric Draft copy of Closeout Report for GAEPD review and comments
2. One (1) Final Closeout Report (two hard copies and one electronic copy).

Task 13: Measures of Success:

- ☐ Demonstrate that all components of the report fulfill GAEPD directives.

#### ☐ Project Attachments

Attachment Type	File Name	Size	Date Uploaded
Project	FY12 - Element 09_Implementation and Drawdown Schedule_FINAL.xls	83.5KB	10/16/2012
Project	FY12 - Element 09_SCOPE FINAL.docx	584.8KB	10/16/2012

#### ☐ Functional Category

Functional Category	Primary
BMP Design/Implementation	Y

#### ☐ NPS Category of Pollution

Category Type	Secondary	Percent (%)	Amount
Agriculture		40%	\$133,448.00
Pasture Grazing			

Other NPS Pollution	Wildlife	60%	\$200,172.00
<b>Total</b>		<b>100%</b>	<b>\$333,620.00</b>

☐ Waterbodies

**Waterbody Type**

Rivers/Streams

☐ Counties

**County Name**

DOOLY

☐ 8-digit HUCs

**Us Huc**

03130006

**Watersheds**

Middle Flint

☐ 12-digit HUCs

**US HUC**

031300060504

031300060505

031300060506

031300060507

**Watersheds**
☐ Load Reduction

\* Load Reduction Area Model: Region 5 Model

Other Comments(Load Reduction Model):

☐ Drainage Area Pollutants

no data found

☐ Best Management Practices

BMP Type	Number Installed	Units	Implementation Date	Drainage Area
Heavy Use Area Protection	1	UNITS	Implemented On	09/30/2014

